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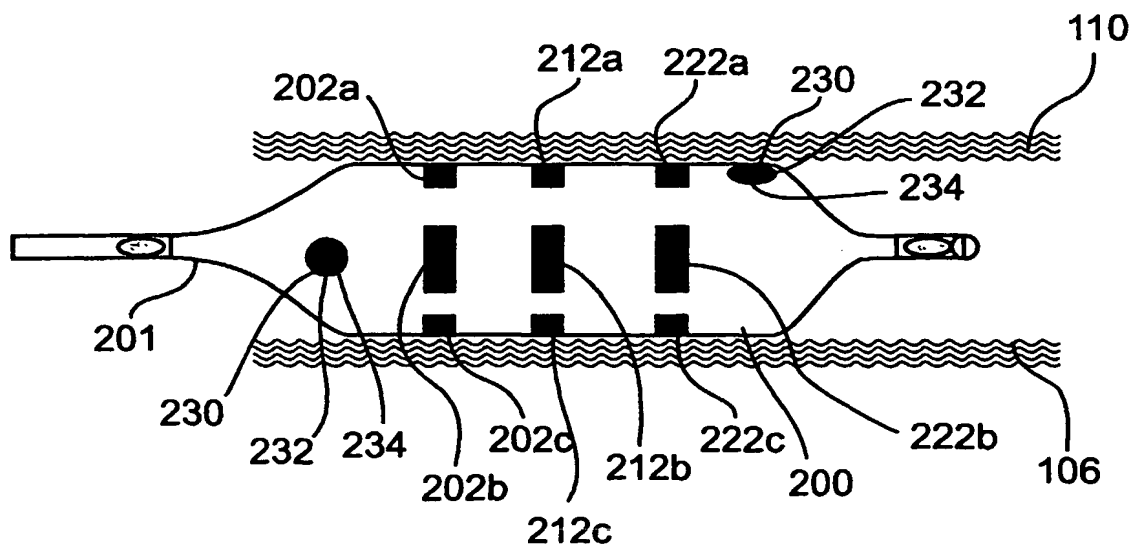
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(54) Title: DEVICE, SYSTEM, AND METHOD FOR DETECTING AND LOCALIZING OBSTRUCTION WITHIN A BLOOD VESSEL



(57) Abstract: The present invention is of system, device, and method for detecting and localizing obstruction in a blood vessel (110). More particularly, the present invention is of a balloon catheter (201) having an expandable balloon (200) which comprises a plurality of strain gauges (202a,b,c;212a,b,c;222a,b,c) operable to report relative degrees of expansion of local portions of a wall of the expandable balloon (200). Incomplete expansion of a local portion of the balloon (200), under common pressure within the balloon (200), indicates presence of an obstruction, such as a region of plaque, within the blood vessel (110).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

14 JUL 2005

| | | |
|---|--|--|
| Applicant's or agent's file reference 27434 | FOR FURTHER ACTION <small>see Form PCT/ISA/220 as well as, where applicable, item 5 below.</small> | |
| International application No. PCT/IL04/00043 | International filing date (<i>day/month/year</i>) 15 January 2004 (15.01.2004) | (Earliest) Priority Date (<i>day/month/year</i>) 16 January 2003 (16.01.2003) |
| Applicant GALIL MEDICAL LTD. | | |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

I.

2. ☐ Certain claims were found unsearchable (See Box No. II)

3. ☐ Unity of invention is lacking (See Box No. III)

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 3



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.

- b. ☐

none of the figures is to be published with the abstract.

Box IV TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

The present invention is of system, device, and method for detecting and localizing obstruction in a blood vessel (110). More particularly, the present invention is of a balloon catheter (201) having an expandable balloon (200) which comprises a plurality of strain gauges (202a,b,c; 212a,b,c; 222a,b,c) operable to report relative degrees of expansion of local portions of a wall of the expandable balloon (200). Incomplete expansion of a local portion of the balloon (200), under common pressure within the balloon (200), indicates presence of an obstruction, such as a region of plaque, within the blood vessel (110).

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL04/00043

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A 61 B 5/103, 5/117
US CL : 600/587

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 600/587, 593; 33/511, 512

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---------------|---|--|
| X --- Y | US 5,865,801 A (Houser) 02 February 1999 (02.02.1999), See column 4, line 27 - column 9, line 34. | 1,2,5- 7,11,19,22,27,29,31,3 4,36 and 40 ----- 12 and 41 |
| X --- Y | US 5,902,308 A (Murphy) 11 May 1999 (11.05.1999), See column 9, lines 12 - 35. | 1,5,6,11,19,34 and 35 ----- 12 and 41 |
| X --- Y | US 6,427,089 B1 (Knowlton) 30 July 2002 (30.07.2002), See column 6, line 18 - column 19, line 8. | 1-5,7,11,19-22,27- 29,31-34 and 40 ----- 12 and 41 |
| Y | US 3,831,588 A (Rindner) 27 August 1974 (27.08.1974), See column 2, lines 16 - 20. | 12 and 41 |
| A | US 5,860,923 A (Lenker et al.) 19 January 1999 (19.01.1999), See entire document. | 1-41 |



Further documents are listed in the continuation of Box C.



See patent family annex.

| | | | |
|--|---|-----|--|
| * Special categories of cited documents: | | "T" | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" | document defining the general state of the art which is not considered to be of particular relevance | "X" | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
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| "P" | document published prior to the international filing date but later than the priority date claimed | | |

Date of the actual completion of the international search

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Name and mailing address of the ISA/US

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